3GPP TSG CN Plenary Meeting #14 **Tdoc NP-010662**
Japan, Kyoto, 12th – 14th December 2001

Source: TSG CN WG2

Title: CR on R99 Work Item CAMEL3, Pack 9

Agenda item: 7.2

Document for: APPROVAL

Introduction:

This document contains 6 CRs on R99 WI CAMEL3 (3 CRs for R99 and the 3 mirror CRs for Rel-4). These CRs have been agreed by TSG CN WG2 and are forwarded to TSG CN Plenary meeting #14 for approval.

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
29.078	217	1	N2-010995	R99	Correction to references for the encoding of APN	F	3.9.0
29.078	225		N2-010996	Rel-4	Correction to references for the encoding of APN	A	4.2.0
29.078	218	1	N2-010984	R99	The use of "White TCAP" shall be mandated for CAP	F	3.9.0
29.078	224		N2-010985	Rel-4	The use of "White TCAP" shall be mandated for CAP	A	4.2.0
29.078	227		N2-011011	R99	Correction to precondition of ContinueWithArgument	F	3.9.0
29.078	229		N2-011039	Rel-4	Correction to precondition of ContinueWithArgument	A	4.2.0

3GPP TSG CN WG2 Meeting #21 ***N2-010984***
Cancun, Mexico, 26th - 30th November 2001

CHANGE REQUEST

⌘ **29.078** **CR** **218** ⌘ **rev** **1** ⌘ Current version: **3.9.0** ⌘

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	The use of "White TCAP", including the AC-name, shall be mandated for CAP
Source:	⌘	Ericsson
Work item code:	⌘	CAMEL3
Date:	⌘	26 November 2001
Category:	⌘	F (essential correction)
Release:	⌘	R99

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change: ⌘

The current wording in section 12 of TS 29.078 implies that a TC-User issuing a TC-BEGIN request primitive, may omit the Application-Context name.

However, the use of "White TCAP" is mandated for CAP. White TCAP, which is defined in ITU-T Recommendation Q.773, defines the Application-Context name as a mandatory parameter when initiating a TCAP dialogue.

The Application-Context name is always required when a TCAP dialogue is established for CAP. TS 29.078 shall therefore be specific w.r.t. this requirement and specify that a TC-User that initiates a TCAP dialogue shall always include the Application-Context name, so a TC-User receiving a TC-BEGIN indication primitive will not have to cater for situations that the Application-Context name is not included.

In addition to the above, TS 29.078 refers in various places, to the Application Context (AC) negotiation mechanism, as used in CS1. TS 29.078 is not specific about the use of the the AC negotiation mechanism in CAP.
However, AC negotiation is not used by CAP. These references in the CAP specification lead to confusion.

The references to the AC negotiation mechanism shall therefore be removed from TS 29.078.

Table 12-1 contains references to IN CS2 only, whilst the preceding text states that table 12-1 defines TC requirements for CAP. The TC requirements for CAP are missing from this table and shall be added. The TC requirements for CS shall be removed from this table.

The table includes an incomplete set of CAP interfaces. However, the TC requirements aply to all CAP interaces. Therefore, all CAP interfaces shall be listed in table 12-1.

Summary of change: ⌘

- Specify that the inclusion of the Application-Context name is mandatory for TC-Begin;

		- Specify that AC negotiation is not by CAP. - Correct the table in section 12-1.
Consequences if not approved:	⌘	- Inconsistent and ambiguous CAP specification; - SCP and gprsSSF designers would need to cater for situations that an Application-Context name is not included in the TC-BEGIN indication primitive, when a TCAP dialogue is opened. Such situations are not allowed; - Designers may be under the assumption that CAP supporting entities have to support the AC negotiation mechanism. This may lead to complex design requirements.

Clauses affected:	⌘	4.1.4.2.2, 4.2.1, 12.1, 12.1.1.3, 12.1.1.4.2		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘	The errors referred to in the present CR are a result of the fact that CS1 functionality has been copied to the CAP specification, without making the necessary modifications to this text.		

*** First Modification ***

4.1.4.2 Definition of CAP compatibility mechanisms

4.1.4.2.1 Compatibility mechanism for interworking of CAP with ETSI CS2 Core INAP and ITU-T Q.1228 INAP

On receipt of an operation according to ITU-T Recommendation Q.1228 [26] or an operation according to EN 301 140-1 [39], which is not part of the CAP or is part of the CAP but which contains parameters which are not part of the CAP:

- the gsmSSF, gsmSCF, assistingSSF and gsmSRF shall apply the normal error handling for unknown operations or parameters, i.e. the normal error handling procedures as specified in clause 10 shall be followed.

Tagging of CAP additions to ITU-T Recommendation Q.1228 [26] and EN 301 140-1 [39] are specified from 50 to 59.

4.1.4.2.2 Procedures for major additions to CAP

In order to support the introduction of major functional changes, the protocol allows a synchronization between the two applications with regard to which functionality is to be performed. This synchronization takes place before the new function is invoked in either application entity, in order to avoid complicated fall-back procedures. ~~The solution chosen to achieve such a synchronization is use of the AC negotiation provided in ETS 300 287 [6].~~

4.1.4.2.3 Procedures for minor additions to CAP

The extension mechanism marker shall be used for future standardized minor additions to CAP. This mechanism implements extensions by including an "extensions marker" in the type definition. The extensions are expressed by optional fields that are placed after the marker. When an entity receives unrecognized parameters that occur after the marker, they are ignored (see ITU-T Recommendation X.680 [33]).

4.1.4.2.4 Procedures for inclusion of network specific additions to CAP

This mechanism is based on the ability to explicitly declare fields of any type via the Macro facility in ASN.1 at the outermost level of a type definition. It works by defining an "ExtensionField" that is placed at the end of the type definition. This extension field is defined as a set of extensions, where an extension can contain any type. Each extension is associated with an identification that unambiguously identifies the extension. Refer to ITU-T Recommendation Q.1400 [28] for a definition of this mechanism.

*** Next Modification ***

4.2 SACF/MACF rules

4.2.1 Reflection of TC AC

TC AC negotiation rules require that the proposed AC, if acceptable, is reflected in the first backwards message.

~~If the AC is not acceptable, and the TC-User does not wish to continue the dialogue, it may provide an alternate AC to the initiator which can be used to start a new dialogue.~~

NOTE: If the gsmSSF, gprsSSF or smsSSF provides an AC which is not acceptable to the gsmSCF, then an alternate AC shall not be returned. If the AC presented to the gsmSCF is not acceptable then this is most probably due to an error in subscriber data provisioning or an error at the gsmSSF, gprsSSF or smsSSF.

~~Refer to EN 300 287 [6] for a description of the TC-AC negotiation mechanism.~~

4.2.2 Sequential/parallel execution of operations

In some cases it may be necessary to distinguish whether operations should be performed sequentially or in parallel (synchronized). Operations which may be synchronized are:

- charging operations; may be synchronized with any other operation.

The method of indicating that operations are to be synchronized is to include them in the same message. Where one of the operations identified above is not to be executed until some other operation has progressed to some extent or finished, the sending PE (usually SCP) shall control this by sending the operations in two separate messages.

This method does not imply that all operations sent in the same message have to be executed simultaneously, but simply that where it could make sense to do so (in the situations identified above) the operations should be synchronized.

In case of inconsistency between the above-mentioned generic rules and the FE-specific rules, as specified in clause 9, the FE-specific rules take precedence over the generic rules.

*** Next Modification ***

12.1 Services assumed from TC

The SS7 application layer protocol defined in this 3GPP TS, is a protocol to provide communication between a pair of application processes. In the SS7 environment this is represented as communication between a pair of application-entities (AEs) using the TC. The function of an AE is provided by a set of application-service-elements (ASEs). The interaction between AEs is described in terms of their use of the services provided by the ASEs.

If AC are to be used for FE differentiation within a physical node then the version of TC used must support the dialogue portion of TC (ie ETS 300 287-1 [6]).

This requirement applies to all interfaces, not just those used for internetworking.

Table 12-1 defines which versions of TC are the minimum versions required to support the defined CAP interfaces:

Table 12-1: Minimum TC requirements for CAP interfaces

~~Interface~~	~~IN CS2~~
~~gsmSSF - gsmSCF~~	~~Blue Book (note)~~
~~gsmSCF - gsmSRF~~	~~Blue Book (note)~~
~~Note: If the AC name needs to be indicated, then ETS 300 287-1 [6] is the minimum version required.~~	

Interface	CAP
gsmSSF - gsmSCF	White Book
gsmSRF - gsmSCF	White Book
assistSSF - gsmSCF	White Book
smsSSF - gsmSCF	White Book
gprsSSF - gsmSCF	White Book

*** Next Modification ***

12.1.1.3 Dialogue handling

12.1.1.3.1 Dialogue establishment

The establishment of a CAP dialogue involves two application processes as described in clause 1, one that is the dialogue-initiator and one that is the dialogue-responder.

~~AC negotiation may not be supported in all PE and/or all networks.~~

This procedure is driven by the following signals:

- A TC-BEGIN request primitive from the dialogue-initiator.
- A TC-BEGIN indication primitive occurring at the responding side
- The first TC-CONTINUE indication primitive occurring at the initiating side or under specific conditions:
  - A TC-END indication primitive occurring at the initiating side
  - A TC-U-ABORT indication primitive occurring at the initiating side
  - A TC-P-ABORT indication primitive occurring at the initiating side

Sending of a TC-BEGIN request

Before issuing a TC-BEGIN request primitive, TC-USER shall store the AC-name and if present the user-information parameter.

TC-USER shall request the invocation of the associated operations using the TC-INVOKE service. See subclause 12.1.1.4.1 for a description of the invocation procedure.

After processing of the last invocation request, TC-USER shall issue a TC-BEGIN request primitive.

The initiator TC-USER then waits for a TC indication primitive and will not issue any other requests, except a TC-U-ABORT request or a TC-END request with the release method parameter set to "pre-arranged release".

Receipt of a TC-BEGIN indication

On receipt of a TC-BEGIN indication primitive, responder TC-USER shall:

- Analyse the application-context-name ~~if~~ included in the primitive. If it is supported, process any other indication primitives received from TC as described in subclause 12.1.1.4.1.
- If the application-context-name included in the primitive is not supported, issue a TC-U-ABORT request primitive.

Receipt of the first TC-CONTINUE indication

On receipt of the first TC-CONTINUE indication primitive for a dialogue, TC-USER shall check the value of the application-context-name parameter. If this value matches the one used in the TC-BEGIN request primitive, TC-USER shall process the following TC component handling indication primitives as described in subclause 12.1.1.4.1, otherwise it shall issue a TC-U-ABORT request primitive.

Receipt of a TC-END indication

On receipt of a TC-END indication primitive in the dialogue initiated state, TC-USER shall check the value of the application-context-name parameter. If this value match the one used in the TC-BEGIN request primitive, then the TC-USER shall process the following TC component handling indication primitives as described in subclause 12.1.1.4.1.

Receipt of a TC-U-ABORT indication

Receipt of a TC-U-ABORT indication primitive is described as part of user abort procedure (see 12.1.1.3.4.)

Receipt of a TC-P-ABORT indication

Receipt of a TC-P-ABORT indication primitive is described as part of provider abort procedure (see 12.1.1.3.5.)

12.1.1.3.2 Dialogue continuation

Once established the dialogue is said to be in a continuation phase.

Both application processes can request the transfer of CAP APDUs until one of them requests the termination of the dialogue.

Sending entity

TC-USER shall process any component handling request primitives as described in subclause 12.1.1.4.1.

After processing the last component handling request primitive, TC-USER shall issue a TC-CONTINUE request primitive.

Receiving entity

On receipt of a TC-CONTINUE indication primitive TC-USER shall accept zero, one or several TC component handling indication primitives and process them as described in subclause 12.1.1.4.1.

12.1.1.3.3 Dialogue termination

Both the dialogue-initiator and the dialogue-responder have the ability to request the termination of a dialogue after it has been established when no dialogue is to be established or when a dialogue is no longer to be maintained according to the rules as stated in subclauses 12.1.2.1.1 and 12.1.2.1.2.

The dialogue termination procedure is driven by the following events:

- A TC-END request primitive
- A TC-END indication primitive

Sending of TC-END request

When the dialogue shall no longer be maintained, TC-USER shall process any component handling request primitives as described in subclause 12.1.1.4.1

After processing the last component handling request primitive (if any), TC-USER shall issue a TC-END request primitive with the release method parameter set to "basic end" or "prearranged release", according to the rules as stated in subclauses 12.1.2.1.1 and 12.1.2.1.2.

When no dialogue is to be established, refer to subclauses 12.1.1.3.1.

Receipt of a TC-END indication

On receipt of a TC-END indication primitive, the TC-USER shall accept any component handling indication primitives and process them as described in subclause 12.1.1.4.1.

After processing the last component handling primitive all dialogue related resources are released.

12.1.1.3.4 User abort

Both the dialogue-initiator and the dialogue-responder have the ability to abort a dialogue at any time.

The user abort procedure is driven by one of the following events:

- A TC-U-ABORT request primitive
- A TC-U-ABORT indication primitive

Sending of TC-U-ABORT request

After issuing a TC-U-ABORT request primitive, all dialogue related resources are released.

Receipt of a TC-U-ABORT indication

On receipt of a TC-U-ABORT indication all dialogue related resources are released.

12.1.1.3.5 Provider abort

TC has the ability to abort a dialogue at both the dialogue-initiator side and the dialogue-responder side.

The provider abort procedure is driven by the following event:

- A TC-P-ABORT indication primitive

Receipt of a TC-P-ABORT indication

On receipt of a TC-P-ABORT indication, all dialogue related resources are released.

12.1.1.3.6 Mapping to TC dialogue primitives

The TC-UNI service is not used by CAP.

The mapping of parameters onto the TC Dialogue services is as follows:

The use of parameters of the TC-BEGIN service is as defined in subclause 12.1.1.3.7 with the following qualifications:

- The Destination Address parameter of the TC-BEGIN service shall be set to the CAP address of the AE which is to respond to the TC-BEGIN service.

  NOTE 1: The address used in this parameter may be mapped by SCCP address translation to one of a number of alternative AEs.

- The AC Name parameter of the TC-BEGIN service shall be set according to the specific interface being used between the initiating AE and the responding AE.

- The Originating Address parameter of the TC-BEGIN service shall be set to the unambiguous CAP address of the AE initiating the TC-BEGIN service.

The use of parameters of the TC-CONTINUE service is as defined in subclause 12.1.1.3.7 with the following qualifications:

- The AC Name parameter of the TC-CONTINUE service shall be set to the value of the AC Name parameter of the TC-BEGIN service for the same Dialogue ID parameter value.

- If present, the Originating Address parameter of the TC-CONTINUE service shall be set to the unambiguous CAP address of the AE initiating the TC-CONTINUE service. This parameter is only present in the first TC-CONTINUE service after a TC-BEGIN service with the same Dialogue ID parameter value.

The use of parameters of the TC-END service is as defined in subclause 12.1.1.3.7 with the following qualifications:

- The AC Name parameter of the TC-END service shall be set to the value of the AC Name parameter of the TC-BEGIN service for the same Dialogue ID parameter value. This parameter is only present if the TC-END service is used immediately after the TC-BEGIN service.

The use of parameters of the TC-U-ABORT service is as defined in subclause 12.1.1.3.7 with the following qualifications:

- The Abort Reason parameter of the TC-U-ABORT service shall be used as specified in ETS 300 287-1 [6].

- The AC Name parameter of the TC-U-ABORT service shall be set to the value used in the TC-BEGIN service.

  NOTE 2: This parameter is only present if the TC-U-ABORT is the immediate response to a TC-BEGIN indication.

The use of parameters of the TC-P-ABORT service is as defined in subclause 12.1.1.3.7 with the following qualifications:

- The P-Abort parameter of the TC-P-ABORT service is set by TC to indicate the reason why TC aborted the dialogue. It shall take the values as defined in ETS 300 287-1 [6].

12.1.1.3.7 Default mapping to TC dialogue parameters

Dialogue Id

The value of this parameter is associated with the CAP invocation in an implementation dependent manner. This parameter uniquely identifies a specific TC dialogue to a remote CAP AE for an CAP AE.

Application-context-name

The application-context-name parameter is set according to the set of operations which need to be supported by the TC dialogue. The defined AC Names can be found in clauses 6 to 8.

User information

This parameter may be used by both initiating and responding application processes. This parameter shall be used for the CAP-GPRS-ReferenceNumber as defined in 12.1.7. For interfaces other than the gprsSSF-gsmSCF interface and for SMS related messages (as in subclauses 12.1.3, 12.1.4 and 12.1.5) the receiving side may ignore this parameter if received. The User Information parameter shall be encoded in accordance with the definition provided in Q.773 (subclause 3.2) [48] and the definition of EXTERNAL type provided in X.690 [34], with the restriction that:

- a size (1..10) constraint of SEQUENCE OF EXTERNAL;

- an Object Identifier shall always be present to identify the user information and the entity which sent it;

- a single-ASN-1-type is used for encoding.

For the use of CAP defined TC-U-Abort reason, see the ASN.1 notation in the subclause 5.7.

For the use of CAP defined CAP-GPRS-ReferenceNumber, see subclause 12.1.7. For the abstract syntax of CAP defined CAP-GPRS-ReferenceNumber, see the ASN.1 notation in the subclause 8.1.

Component present

This parameter is used by TC-USER as described in ETS 300 287-1 [6].

Termination

The value of the release method parameter of the TC-END request primitive is set by TC-USER according to the rules as stated in subclauses 12.1.2.1.1 and 12.1.2.1.2.

Quality of service

The quality of service of TC request primitives is set by the TC-USER to the following value:

- Sequencing requested;

- return option, this parameter is set by TC-USER in an implementation dependent manner.

*** Next Modification ***

12.1.1.4 Component handling

12.1.1.4.1 Procedures for CAP operations

This subclause describes the procedures for CAP operations.

Operation invocation

TC-USER shall build an operation argument from the parameters received and request the invocation of the associated operation using the TC-INVOKE procedure. If a linked ID parameter is inserted in the primitive this indicates a child operation and implies that the operation is linked to a parent operation.

Operation invocation receipt

On receipt of a TC-INVOKE indication primitive, TC-USER shall

- If the operation code does not correspond to an operation supported by the application-context, request the transfer of a reject component using the TC-U-REJECT request primitive, with the appropriate problem code (unrecognized operation);
- If a linked ID is included, perform the following checks: If the operation referred to by the linked ID does not allow linked operations or if the operation code does not correspond to a permitted linked operation, or if the parent operation invocation is not active, issue a TC-U-REJECT request primitive with the appropriate problem code (linked response unexpected or unexpected linked operation);
- If the type of the argument is not the one defined for the operation, request the transfer of a reject component using the TC-U-REJECT request primitive, with the appropriate problem code (mistyped parameter);
- if the operation cannot be invoked because the CAP related dialogue is about to be released, requests the transfer of the reject component using the TC-U-REJECT request primitive with the problem code (Initiating Release);
- if sufficient CAP related resources are not available to perform the requested operation, request the transfer of a reject component using the TC-U-REJECT request primitive with the problem code (Resource Limitation);
- Otherwise, accept the TC-INVOKE indication primitive. If the operation is to be user confirmed, TC-USER waits for the corresponding response.

Operation Response

For user confirmed operations, TC-USER shall:

- If no error indication is included in the response to a class 1 or 3 operation, construct a result information element from the parameters received and request its transfer using the TC-RESULT-L service.
- If an error indication is included in the response to a class 1 or 2 operation, construct an error parameter from the parameters received and request its transfer using the TC-U-ERROR request primitive.

Receipt of a response

On receipt of a TC-RESULT-NL indication, TC-USER shall:

- Request the transfer of a reject component using the TC-U-REJECT request primitive, with the appropriate problem code (mistyped parameter).

On receipt of a TC-RESULT-L indication, TC-USER shall:

- if the type of the result parameter is not the one defined for the result of this operation, request the transfer of a reject component using the TC-U-REJECT request primitive, with the appropriate problem code (mistyped parameter);
- otherwise, accept the TC-RESULT-L indication primitive.

On receipt of a TC-U-ERROR indication, TC-USER shall:

- if the error code is not defined for the TC-USER or is not one associated with the operation referred to by the invoke ID, request the transfer of a reject component using the TC-U-REJECT request primitive, with the appropriate problem code (unrecognized error or unexpected error);

- if the type of the error parameter is not the one defined for this error, request the transfer of a reject component using the TC-U-REJECT request primitive, with the appropriate problem code (mistyped parameter);

- Otherwise, accept the TC-U-ERROR indication primitive.

On receipt of a TC-U-REJECT indication primitive which affects a pending operation, TC-USER shall:

- accept the TC-U-REJECT indication primitive.

On receipt of a TC-L-REJECT indicating "return result problem, return error unexpected", TC-USER shall inform the application process.

On receipt of a TC-L-REJECT indicating "return error problem, return error unexpected", TC-USER shall inform the application process.

This event occurs when the local TC detects a protocol error in an incoming component which affects an operation.

When the problem code indicates a general problem, it is considered that the event cannot be related to an active operation even if the invoke Id is provided by TC. This is because it is unclear whether the invoke Id refers to a local or remote invocation. The behaviour of TC-USER in such a case is described in the subclause headed "other events".

On receipt of a TC-L-CANCEL indication, the TC-USER shall:

- if the associated operation is a class 1 operation, inform the application process;

- if the associated operation is a class 2 operation and no linked operations are defined for this operation, ignore the primitive;

- if the associated operation is a class 2 operation and has linked operations but none of them has been invoked, inform the application process;

- if the associated operation is a class 2 operation and a linked operation invocation has already been received in response to this operation, ignore the primitive;

- if the associated operation is a class 3 operation, inform the application process;

- if the associated operation is a class 4 operation, ignore the primitive;

Other events

This subclause describes the behaviour of TC-USER on receipt of a component handling indication primitive which cannot be related to any operation or which does not affect a pending one.

On receipt of a TC-U-REJECT indication primitive which does not affect an active operation (i.e. indicating a return result or return error problem), it is up to the application process to abort, continue or terminate the dialogue, if not already terminated by the sending application process according to the rules as stated in subclause 12.1.2.1.2. This is also applicable for invoke problems related to a class 4 linked operation.

On receipt of a TC-R-REJECT indication (i.e. when a protocol error has been detected by the peer TC entity) which does not affect an active operation, it is up to the application process to abort, continue or terminate the dialogue, if not already terminated by the sending application process according to the rules as stated in subclause 12.1.2.1.2.

On receipt of a TC-L-REJECT indication primitive (i.e. when a protocol error has been detected by the local TC entity) which cannot be related to an active operation, it is up to the application process to continue, or to terminate the dialogue and implicitly trigger the transmission of the reject component or to abort the dialogue.

On receipt of a TC-NOTICE indication primitive, which informs the TC-USER that a message cannot be delivered by the Network Layer, it is for the application process to decide whether to terminate the dialogue or retry.

This primitive can only occur if the Return Option has been set (see subclause 12.1.1.3.6).

12.1.1.4.2 Mapping to TC component primitives

The mapping of parameters onto the TC Component services is as follows:

The TC-U-CANCEL service is not used.

The TC-RESULT-NL service is not used.

The use of parameters of the TC-INVOKE service is as defined in subclause 12.1.1.4.3 with the following qualifications:

- The Operation parameter of the TC-INVOKE service shall contain the *operation.&operationCode* value of the CAP operation to be invoked. The operation must be one of the valid operations supported by the ~~negotiated~~ AC for the TC dialogue and must be invokable by the local AE.

- The Parameters parameter of the TC-INVOKE service shall contain a value of the *operation.&ArgumentType* value for the operation being invoked, as specified by the Operation parameter.

The use of parameters of the TC-RESULT-L service is as defined in subclause 12.1.1.4.3 with the following qualifications:

- The Invoke Id parameter of the TC-RESULT-L service shall be set to the value of the Invoke Id parameter of the TC-INVOKE service from the remote AE to which a result is being sent.

- The Operation parameter of the TC-RESULT-L service be set to the value of the Operation parameter of the TC-INVOKE service from the remote AE which contains the same Invoke Id Parameter value.

- The Parameters parameter of the TC-RESULT-L service shall contain the *operation.&ResultType* value for the operation result, as specified by the Operation parameter.

The use of parameters of the TC-U-ERROR service is as defined in subclause 12.1.1.4.3 with the following qualifications:

- The Invoke Id parameter of the TC-U-ERROR service shall be set to the value of the Invoke Id parameter of the TC-INVOKE service from the remote AE to which an error is being sent.

- The Error parameter of the TC-U-ERROR service shall be set to the value of the *error.&errorCode* of the error to be sent. It must be one of the errors which is expected for the invoked operation as defined in the *operation.&Errors* specification.

- The Parameters parameter of the TC-U-ERROR service shall be set to the value of the *error.&ParameterType* of the error to be sent, as identified by the Error parameter.

The use of parameters of the TC-U-REJECT service is as defined in subclause 12.1.1.4.3 with the following qualifications:

- The Invoke Id parameter of the TC-U-REJECT service shall be set to the Invoke Id Parameter of the TC component service from the remote AE which is being rejected.

The use of parameters of the TC-L-CANCEL service is as defined in subclause 12.1.1.4.3.

12.1.1.4.3 Default mapping to TC component parameters

Invoke Id

This parameter is set by the sending application process. It represents the unique identity of an instance of an operation which is invoked by a AE within a specific TC dialogue. The TC dialogue is identified by the Dialogue Id parameter.

Linked Id

This parameter is set by the sending application process. It represents the Invoke Id of an operation which was received from the remote AE for a specific TC dialogue to which the operation being invoked by the local AE is to be linked. This parameter is only present if the original operation invoked by the remote AE is defined as having linked operations. The type of local operation invoked must be the same type as one of the operations defined as being linked.

Dialogue Id

The value of this parameter is associated with the CAP invocation in an implementation dependent manner. It represents the identity of the established TC dialogue which will carry the component services between the local AE and the remote AE.

Class

The value of this parameter is set according to the type of the operation to be invoked according to the operation definitions in clauses 6 through 8.

Time out

The value of this parameter is set according to the type of operation invoked.

Last component

This parameter is used as described in ETS 300 287-1 [6].

Problem code

This parameter is used as described in subclause 12.1.1.4.1.

Abort reason

This parameter is used by TC-USER, and attributes and coding are specified by network operator.

*** End of Document ***

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Cancun, Mexico, 26th - 30th November 2001

CHANGE REQUEST

⌘ **29.078** **CR** **224** ⌘ **rev** ⌘ Current version: **4.2.0** ⌘

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	The use of "White TCAP", including the AC-name, shall be mandated for CAP
Source:	⌘	Ericsson
Work item code:	⌘	CAMEL3
Date:	⌘	27 November 2001
Category:	⌘	A
Release:	⌘	Rel-4

Use one of the following categories:
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B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*

Use one of the following releases:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
REL-4 *(Release 4)*
REL-5 *(Release 5)*

Reason for change: ⌘

The current wording in section 12 of TS 29.078 implies that a TC-User issuing a TC-BEGIN request primitive, may omit the Application-Context name.

However, the use of "White TCAP" is mandated for CAP. White TCAP, which is defined in ITU-T Recommendation Q.773, defines the Application-Context name as a mandatory parameter when initiating a TCAP dialogue.

The Application-Context name is always required when a TCAP dialogue is established for CAP. TS 29.078 shall therefore be specific w.r.t. this requirement and specify that a TC-User that initiates a TCAP dialogue shall always include the Application-Context name, so a TC-User receiving a TC-BEGIN indication primitive will not have to cater for situations that the Application-Context name is not included.

In addition to the above, TS 29.078 refers in various places, to the Application Context (AC) negotiation mechanism, as used in CS1. TS 29.078 is not specific about the use of the the AC negotiation mechanism in CAP.
However, AC negotiation is not used by CAP. These references in the CAP specification lead to confusion.

The references to the AC negotiation mechanism shall therefore be removed from TS 29.078.

Table 12-1 contains references to IN CS2 only, whilst the preceding text states that table 12-1 defines TC requirements for CAP. The TC requirements for CAP are missing from this table and shall be added. The TC requirements for CS shall be removed from this table.

The table includes an incomplete set of CAP interfaces. However, the TC requirements aply to all CAP interaces. Therefore, all CAP interfaces shall be listed in table 12-1.

Summary of change: ⌘

- Specify that the inclusion of the Application-Context name is mandatory for TC-Begin;

		- Specify that AC negotiation is not by CAP. - Correct the table in section 12-1.
Consequences if not approved:	⌘	- Inconsistent and ambiguous CAP specification; - SCP and gprsSSF designers would need to cater for situations that an Application-Context name is not included in the TC-BEGIN indication primitive, when a TCAP dialogue is opened. Such situations are not allowed; - Designers may be under the assumption that CAP supporting entities have to support the AC negotiation mechanism. This may lead to complex design requirements.

Clauses affected:	⌘	4.1.4.2.2, 4.2.1, 12.1, 12.1.1.3, 12.1.1.4.2		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘	The errors referred to in the present CR are a result of the fact that CS1 functionality has been copied to the CAP specification, without making the necessary modifications to this text.		

*** First Modification ***

4.1.4.2 Definition of CAP compatibility mechanisms

4.1.4.2.1 Compatibility mechanism for interworking of CAP with ETSI CS2 Core INAP and ITU-T Q.1228 INAP

On receipt of an operation according to ITU-T Recommendation Q.1228 [26] or an operation according to EN 301 140-1 [39], which is not part of the CAP or is part of the CAP but which contains parameters which are not part of the CAP:

- the gsmSSF, gsmSCF, assistingSSF and gsmSRF shall apply the normal error handling for unknown operations or parameters, i.e. the normal error handling procedures as specified in clause 10 shall be followed.

Tagging of CAP additions to ITU-T Recommendation Q.1228 [26] and EN 301 140-1 [39] are specified from 50 to 59.

4.1.4.2.2 Procedures for major additions to CAP

In order to support the introduction of major functional changes, the protocol allows a synchronization between the two applications with regard to which functionality is to be performed. This synchronization takes place before the new function is invoked in either application entity, in order to avoid complicated fall-back procedures. ~~The solution chosen to achieve such a synchronization is use of the AC negotiation provided in ETS 300 287 [6].~~

4.1.4.2.3 Procedures for minor additions to CAP

The extension mechanism marker shall be used for future standardized minor additions to CAP. This mechanism implements extensions by including an "extensions marker" in the type definition. The extensions are expressed by optional fields that are placed after the marker. When an entity receives unrecognized parameters that occur after the marker, they are ignored (see ITU-T Recommendation X.680 [33]).

4.1.4.2.4 Procedures for inclusion of network specific additions to CAP

This mechanism is based on the ability to explicitly declare fields of any type via the Macro facility in ASN.1 at the outermost level of a type definition. It works by defining an "ExtensionField" that is placed at the end of the type definition. This extension field is defined as a set of extensions, where an extension can contain any type. Each extension is associated with an identification that unambiguously identifies the extension. Refer to ITU-T Recommendation Q.1400 [28] for a definition of this mechanism.

*** Next Modification ***

4.2 SACF/MACF rules

4.2.1 Reflection of TC AC

TC AC negotiation rules require that the proposed AC, if acceptable, is reflected in the first backwards message.

~~If the AC is not acceptable, and the TC-User does not wish to continue the dialogue, it may provide an alternate AC to the initiator which can be used to start a new dialogue.~~

NOTE: If the gsmSSF, gprsSSF or smsSSF provides an AC which is not acceptable to the gsmSCF, then an alternate AC shall not be returned. If the AC presented to the gsmSCF is not acceptable then this is most probably due to an error in subscriber data provisioning or an error at the gsmSSF, gprsSSF or smsSSF.

~~Refer to EN 300 287 [6] for a description of the TC-AC negotiation mechanism.~~

4.2.2 Sequential/parallel execution of operations

In some cases it may be necessary to distinguish whether operations should be performed sequentially or in parallel (synchronized). Operations which may be synchronized are:

- charging operations; may be synchronized with any other operation.

The method of indicating that operations are to be synchronized is to include them in the same message. Where one of the operations identified above is not to be executed until some other operation has progressed to some extent or finished, the sending PE (usually SCP) shall control this by sending the operations in two separate messages.

This method does not imply that all operations sent in the same message have to be executed simultaneously, but simply that where it could make sense to do so (in the situations identified above) the operations should be synchronized.

In case of inconsistency between the above-mentioned generic rules and the FE-specific rules, as specified in clause 9, the FE-specific rules take precedence over the generic rules.

*** Next Modification ***

12.1 Services assumed from TC

The SS7 application layer protocol defined in this 3GPP TS, is a protocol to provide communication between a pair of application processes. In the SS7 environment this is represented as communication between a pair of application-entities (AEs) using the TC. The function of an AE is provided by a set of application-service-elements (ASEs). The interaction between AEs is described in terms of their use of the services provided by the ASEs.

If AC are to be used for FE differentiation within a physical node then the version of TC used must support the dialogue portion of TC (ie ETS 300 287-1 [6]).

This requirement applies to all interfaces, not just those used for internetworking.

Table 12-1 defines which versions of TC are the minimum versions required to support the defined CAP interfaces:

Table 12-1: Minimum TC requirements for CAP interfaces

~~Interface~~	~~IN CS2~~
~~gsmSSF - gsmSCF~~	~~Blue Book (note)~~
~~gsmSCF - gsmSRF~~	~~Blue Book (note)~~
~~Note: If the AC name needs to be indicated, then ETS 300 287-1 [6] is the minimum version required.~~	

Interface	CAP
gsmSSF - gsmSCF	White Book
gsmSRF - gsmSCF	White Book
assistSSF - gsmSCF	White Book
smsSSF - gsmSCF	White Book
gprsSSF - gsmSCF	White Book

*** Next Modification ***

12.1.1.3 Dialogue handling

12.1.1.3.1 Dialogue establishment

The establishment of a CAP dialogue involves two application processes as described in clause 1, one that is the dialogue-initiator and one that is the dialogue-responder.

~~AC negotiation may not be supported in all PE and/or all networks.~~

This procedure is driven by the following signals:

- A TC-BEGIN request primitive from the dialogue-initiator.
- A TC-BEGIN indication primitive occurring at the responding side
- The first TC-CONTINUE indication primitive occurring at the initiating side or under specific conditions:
  - A TC-END indication primitive occurring at the initiating side
  - A TC-U-ABORT indication primitive occurring at the initiating side
  - A TC-P-ABORT indication primitive occurring at the initiating side

Sending of a TC-BEGIN request

Before issuing a TC-BEGIN request primitive, TC-USER shall store the AC-name and if present the user-information parameter.

TC-USER shall request the invocation of the associated operations using the TC-INVOKE service. See subclause 12.1.1.4.1 for a description of the invocation procedure.

After processing of the last invocation request, TC-USER shall issue a TC-BEGIN request primitive.

The initiator TC-USER then waits for a TC indication primitive and will not issue any other requests, except a TC-U-ABORT request or a TC-END request with the release method parameter set to "pre-arranged release".

Receipt of a TC-BEGIN indication

On receipt of a TC-BEGIN indication primitive, responder TC-USER shall:

- Analyse the application-context-name ~~if~~ included in the primitive. If it is supported, process any other indication primitives received from TC as described in subclause 12.1.1.4.1.
- If the application-context-name included in the primitive is not supported, issue a TC-U-ABORT request primitive.

Receipt of the first TC-CONTINUE indication

On receipt of the first TC-CONTINUE indication primitive for a dialogue, TC-USER shall check the value of the application-context-name parameter. If this value matches the one used in the TC-BEGIN request primitive, TC-USER shall process the following TC component handling indication primitives as described in subclause 12.1.1.4.1, otherwise it shall issue a TC-U-ABORT request primitive.

Receipt of a TC-END indication

On receipt of a TC-END indication primitive in the dialogue initiated state, TC-USER shall check the value of the application-context-name parameter. If this value match the one used in the TC-BEGIN request primitive, then the TC-USER shall process the following TC component handling indication primitives as described in subclause 12.1.1.4.1.

Receipt of a TC-U-ABORT indication

Receipt of a TC-U-ABORT indication primitive is described as part of user abort procedure (see 12.1.1.3.4.)

Receipt of a TC-P-ABORT indication

Receipt of a TC-P-ABORT indication primitive is described as part of provider abort procedure (see 12.1.1.3.5.)

12.1.1.3.2 Dialogue continuation

Once established the dialogue is said to be in a continuation phase.

Both application processes can request the transfer of CAP APDUs until one of them requests the termination of the dialogue.

Sending entity

TC-USER shall process any component handling request primitives as described in subclause 12.1.1.4.1.

After processing the last component handling request primitive, TC-USER shall issue a TC-CONTINUE request primitive.

Receiving entity

On receipt of a TC-CONTINUE indication primitive TC-USER shall accept zero, one or several TC component handling indication primitives and process them as described in subclause 12.1.1.4.1.

12.1.1.3.3 Dialogue termination

Both the dialogue-initiator and the dialogue-responder have the ability to request the termination of a dialogue after it has been established when no dialogue is to be established or when a dialogue is no longer to be maintained according to the rules as stated in subclauses 12.1.2.1.1 and 12.1.2.1.2.

The dialogue termination procedure is driven by the following events:

- A TC-END request primitive
- A TC-END indication primitive

Sending of TC-END request

When the dialogue shall no longer be maintained, TC-USER shall process any component handling request primitives as described in subclause 12.1.1.4.1

After processing the last component handling request primitive (if any), TC-USER shall issue a TC-END request primitive with the release method parameter set to "basic end" or "prearranged release", according to the rules as stated in subclauses 12.1.2.1.1 and 12.1.2.1.2.

When no dialogue is to be established, refer to subclauses 12.1.1.3.1.

Receipt of a TC-END indication

On receipt of a TC-END indication primitive, the TC-USER shall accept any component handling indication primitives and process them as described in subclause 12.1.1.4.1.

After processing the last component handling primitive all dialogue related resources are released.

12.1.1.3.4 User abort

Both the dialogue-initiator and the dialogue-responder have the ability to abort a dialogue at any time.

The user abort procedure is driven by one of the following events:

- A TC-U-ABORT request primitive
- A TC-U-ABORT indication primitive

Sending of TC-U-ABORT request

After issuing a TC-U-ABORT request primitive, all dialogue related resources are released.

Receipt of a TC-U-ABORT indication

On receipt of a TC-U-ABORT indication all dialogue related resources are released.

12.1.1.3.5 Provider abort

TC has the ability to abort a dialogue at both the dialogue-initiator side and the dialogue-responder side.

The provider abort procedure is driven by the following event:

- A TC-P-ABORT indication primitive

Receipt of a TC-P-ABORT indication

On receipt of a TC-P-ABORT indication, all dialogue related resources are released.

12.1.1.3.6 Mapping to TC dialogue primitives

The TC-UNI service is not used by CAP.

The mapping of parameters onto the TC Dialogue services is as follows:

The use of parameters of the TC-BEGIN service is as defined in subclause 12.1.1.3.7 with the following qualifications:

- The Destination Address parameter of the TC-BEGIN service shall be set to the CAP address of the AE which is to respond to the TC-BEGIN service.

  NOTE 1: The address used in this parameter may be mapped by SCCP address translation to one of a number of alternative AEs.

- The AC Name parameter of the TC-BEGIN service shall be set according to the specific interface being used between the initiating AE and the responding AE.

- The Originating Address parameter of the TC-BEGIN service shall be set to the unambiguous CAP address of the AE initiating the TC-BEGIN service.

The use of parameters of the TC-CONTINUE service is as defined in subclause 12.1.1.3.7 with the following qualifications:

- The AC Name parameter of the TC-CONTINUE service shall be set to the value of the AC Name parameter of the TC-BEGIN service for the same Dialogue ID parameter value.

- If present, the Originating Address parameter of the TC-CONTINUE service shall be set to the unambiguous CAP address of the AE initiating the TC-CONTINUE service. This parameter is only present in the first TC-CONTINUE service after a TC-BEGIN service with the same Dialogue ID parameter value.

The use of parameters of the TC-END service is as defined in subclause 12.1.1.3.7 with the following qualifications:

- The AC Name parameter of the TC-END service shall be set to the value of the AC Name parameter of the TC-BEGIN service for the same Dialogue ID parameter value. This parameter is only present if the TC-END service is used immediately after the TC-BEGIN service.

The use of parameters of the TC-U-ABORT service is as defined in subclause 12.1.1.3.7 with the following qualifications:

- The Abort Reason parameter of the TC-U-ABORT service shall be used as specified in ETS 300 287-1 [6].

- The AC Name parameter of the TC-U-ABORT service shall be set to the value used in the TC-BEGIN service.

  NOTE 2: This parameter is only present if the TC-U-ABORT is the immediate response to a TC-BEGIN indication.

The use of parameters of the TC-P-ABORT service is as defined in subclause 12.1.1.3.7 with the following qualifications:

- The P-Abort parameter of the TC-P-ABORT service is set by TC to indicate the reason why TC aborted the dialogue. It shall take the values as defined in ETS 300 287-1 [6].

12.1.1.3.7 Default mapping to TC dialogue parameters

Dialogue Id

The value of this parameter is associated with the CAP invocation in an implementation dependent manner. This parameter uniquely identifies a specific TC dialogue to a remote CAP AE for an CAP AE.

Application-context-name

The application-context-name parameter is set according to the set of operations which need to be supported by the TC dialogue. The defined AC Names can be found in clauses 6 to 8.

User information

This parameter may be used by both initiating and responding application processes. This parameter shall be used for the CAP-GPRS-ReferenceNumber as defined in 12.1.7. For interfaces other than the gprsSSF-gsmSCF interface and for SMS related messages (as in subclauses 12.1.3, 12.1.4 and 12.1.5) the receiving side may ignore this parameter if received. The User Information parameter shall be encoded in accordance with the definition provided in Q.773 (subclause 3.2) [48] and the definition of EXTERNAL type provided in X.690 [34], with the restriction that:

- a size (1..10) constraint of SEQUENCE OF EXTERNAL;

- an Object Identifier shall always be present to identify the user information and the entity which sent it;

- a single-ASN-1-type is used for encoding.

For the use of CAP defined TC-U-Abort reason, see the ASN.1 notation in the subclause 5.7.

For the use of CAP defined CAP-GPRS-ReferenceNumber, see subclause 12.1.7. For the abstract syntax of CAP defined CAP-GPRS-ReferenceNumber, see the ASN.1 notation in the subclause 8.1.

Component present

This parameter is used by TC-USER as described in ETS 300 287-1 [6].

Termination

The value of the release method parameter of the TC-END request primitive is set by TC-USER according to the rules as stated in subclauses 12.1.2.1.1 and 12.1.2.1.2.

Quality of service

The quality of service of TC request primitives is set by the TC-USER to the following value:

- Sequencing requested;

- return option, this parameter is set by TC-USER in an implementation dependent manner.

*** Next Modification ***

12.1.1.4 Component handling

12.1.1.4.1 Procedures for CAP operations

This subclause describes the procedures for CAP operations.

Operation invocation

TC-USER shall build an operation argument from the parameters received and request the invocation of the associated operation using the TC-INVOKE procedure. If a linked ID parameter is inserted in the primitive this indicates a child operation and implies that the operation is linked to a parent operation.

Operation invocation receipt

On receipt of a TC-INVOKE indication primitive, TC-USER shall

- If the operation code does not correspond to an operation supported by the application-context, request the transfer of a reject component using the TC-U-REJECT request primitive, with the appropriate problem code (unrecognized operation);
- If a linked ID is included, perform the following checks: If the operation referred to by the linked ID does not allow linked operations or if the operation code does not correspond to a permitted linked operation, or if the parent operation invocation is not active, issue a TC-U-REJECT request primitive with the appropriate problem code (linked response unexpected or unexpected linked operation);
- If the type of the argument is not the one defined for the operation, request the transfer of a reject component using the TC-U-REJECT request primitive, with the appropriate problem code (mistyped parameter);
- if the operation cannot be invoked because the CAP related dialogue is about to be released, requests the transfer of the reject component using the TC-U-REJECT request primitive with the problem code (Initiating Release);
- if sufficient CAP related resources are not available to perform the requested operation, request the transfer of a reject component using the TC-U-REJECT request primitive with the problem code (Resource Limitation);
- Otherwise, accept the TC-INVOKE indication primitive. If the operation is to be user confirmed, TC-USER waits for the corresponding response.

Operation Response

For user confirmed operations, TC-USER shall:

- If no error indication is included in the response to a class 1 or 3 operation, construct a result information element from the parameters received and request its transfer using the TC-RESULT-L service.
- If an error indication is included in the response to a class 1 or 2 operation, construct an error parameter from the parameters received and request its transfer using the TC-U-ERROR request primitive.

Receipt of a response

On receipt of a TC-RESULT-NL indication, TC-USER shall:

- Request the transfer of a reject component using the TC-U-REJECT request primitive, with the appropriate problem code (mistyped parameter).

On receipt of a TC-RESULT-L indication, TC-USER shall:

- if the type of the result parameter is not the one defined for the result of this operation, request the transfer of a reject component using the TC-U-REJECT request primitive, with the appropriate problem code (mistyped parameter);
- otherwise, accept the TC-RESULT-L indication primitive.

On receipt of a TC-U-ERROR indication, TC-USER shall:

- if the error code is not defined for the TC-USER or is not one associated with the operation referred to by the invoke ID, request the transfer of a reject component using the TC-U-REJECT request primitive, with the appropriate problem code (unrecognized error or unexpected error);

- if the type of the error parameter is not the one defined for this error, request the transfer of a reject component using the TC-U-REJECT request primitive, with the appropriate problem code (mistyped parameter);

- Otherwise, accept the TC-U-ERROR indication primitive.

On receipt of a TC-U-REJECT indication primitive which affects a pending operation, TC-USER shall:

- accept the TC-U-REJECT indication primitive.

On receipt of a TC-L-REJECT indicating "return result problem, return error unexpected", TC-USER shall inform the application process.

On receipt of a TC-L-REJECT indicating "return error problem, return error unexpected", TC-USER shall inform the application process.

This event occurs when the local TC detects a protocol error in an incoming component which affects an operation.

When the problem code indicates a general problem, it is considered that the event cannot be related to an active operation even if the invoke Id is provided by TC. This is because it is unclear whether the invoke Id refers to a local or remote invocation. The behaviour of TC-USER in such a case is described in the subclause headed "other events".

On receipt of a TC-L-CANCEL indication, the TC-USER shall:

- if the associated operation is a class 1 operation, inform the application process;

- if the associated operation is a class 2 operation and no linked operations are defined for this operation, ignore the primitive;

- if the associated operation is a class 2 operation and has linked operations but none of them has been invoked, inform the application process;

- if the associated operation is a class 2 operation and a linked operation invocation has already been received in response to this operation, ignore the primitive;

- if the associated operation is a class 3 operation, inform the application process;

- if the associated operation is a class 4 operation, ignore the primitive;

Other events

This subclause describes the behaviour of TC-USER on receipt of a component handling indication primitive which cannot be related to any operation or which does not affect a pending one.

On receipt of a TC-U-REJECT indication primitive which does not affect an active operation (i.e. indicating a return result or return error problem), it is up to the application process to abort, continue or terminate the dialogue, if not already terminated by the sending application process according to the rules as stated in subclause 12.1.2.1.2. This is also applicable for invoke problems related to a class 4 linked operation.

On receipt of a TC-R-REJECT indication (i.e. when a protocol error has been detected by the peer TC entity) which does not affect an active operation, it is up to the application process to abort, continue or terminate the dialogue, if not already terminated by the sending application process according to the rules as stated in subclause 12.1.2.1.2.

On receipt of a TC-L-REJECT indication primitive (i.e. when a protocol error has been detected by the local TC entity) which cannot be related to an active operation, it is up to the application process to continue, or to terminate the dialogue and implicitly trigger the transmission of the reject component or to abort the dialogue.

On receipt of a TC-NOTICE indication primitive, which informs the TC-USER that a message cannot be delivered by the Network Layer, it is for the application process to decide whether to terminate the dialogue or retry.

This primitive can only occur if the Return Option has been set (see subclause 12.1.1.3.6).

12.1.1.4.2 Mapping to TC component primitives

The mapping of parameters onto the TC Component services is as follows:

The TC-U-CANCEL service is not used.

The TC-RESULT-NL service is not used.

The use of parameters of the TC-INVOKE service is as defined in subclause 12.1.1.4.3 with the following qualifications:

- The Operation parameter of the TC-INVOKE service shall contain the *operation.&operationCode* value of the CAP operation to be invoked. The operation must be one of the valid operations supported by the ~~negotiated~~ AC for the TC dialogue and must be invokable by the local AE.

- The Parameters parameter of the TC-INVOKE service shall contain a value of the *operation.&ArgumentType* value for the operation being invoked, as specified by the Operation parameter.

The use of parameters of the TC-RESULT-L service is as defined in subclause 12.1.1.4.3 with the following qualifications:

- The Invoke Id parameter of the TC-RESULT-L service shall be set to the value of the Invoke Id parameter of the TC-INVOKE service from the remote AE to which a result is being sent.

- The Operation parameter of the TC-RESULT-L service be set to the value of the Operation parameter of the TC-INVOKE service from the remote AE which contains the same Invoke Id Parameter value.

- The Parameters parameter of the TC-RESULT-L service shall contain the *operation.&ResultType* value for the operation result, as specified by the Operation parameter.

The use of parameters of the TC-U-ERROR service is as defined in subclause 12.1.1.4.3 with the following qualifications:

- The Invoke Id parameter of the TC-U-ERROR service shall be set to the value of the Invoke Id parameter of the TC-INVOKE service from the remote AE to which an error is being sent.

- The Error parameter of the TC-U-ERROR service shall be set to the value of the *error.&errorCode* of the error to be sent. It must be one of the errors which is expected for the invoked operation as defined in the *operation.&Errors* specification.

- The Parameters parameter of the TC-U-ERROR service shall be set to the value of the *error.&ParameterType* of the error to be sent, as identified by the Error parameter.

The use of parameters of the TC-U-REJECT service is as defined in subclause 12.1.1.4.3 with the following qualifications:

- The Invoke Id parameter of the TC-U-REJECT service shall be set to the Invoke Id Parameter of the TC component service from the remote AE which is being rejected.

The use of parameters of the TC-L-CANCEL service is as defined in subclause 12.1.1.4.3.

12.1.1.4.3 Default mapping to TC component parameters

Invoke Id

This parameter is set by the sending application process. It represents the unique identity of an instance of an operation which is invoked by a AE within a specific TC dialogue. The TC dialogue is identified by the Dialogue Id parameter.

Linked Id

This parameter is set by the sending application process. It represents the Invoke Id of an operation which was received from the remote AE for a specific TC dialogue to which the operation being invoked by the local AE is to be linked. This parameter is only present if the original operation invoked by the remote AE is defined as having linked operations. The type of local operation invoked must be the same type as one of the operations defined as being linked.

Dialogue Id

The value of this parameter is associated with the CAP invocation in an implementation dependent manner. It represents the identity of the established TC dialogue which will carry the component services between the local AE and the remote AE.

Class

The value of this parameter is set according to the type of the operation to be invoked according to the operation definitions in clauses 6 through 8.

Time out

The value of this parameter is set according to the type of operation invoked.

Last component

This parameter is used as described in ETS 300 287-1 [6].

Problem code

This parameter is used as described in subclause 12.1.1.4.1.

Abort reason

This parameter is used by TC-USER, and attributes and coding are specified by network operator.

*** End of Document ***

3GPP TSG CN WG2 Meeting #21 ***N2-010995***
Cancun, Mexico, 26th - 30th November 2001

CHANGE REQUEST

⌘ **29.078** **CR** **217** ⌘ **rev** **1** ⌘ Current version: **3.9.0** ⌘

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	Correction to references for the encoding of APN
Source:	⌘	Ericsson
Work item code:	⌘	CAMEL3
Date:	⌘	27 November 2001
Category:	⌘	F (essential correction)
Release:	⌘	R99

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change: ⌘ TS 29.078 contains inconsistent references for the encoding of the APN.

APN data type: "refer to 3GPP TS 24.008 [12] for the encoding."

ConnectGPRS: "The encoding of this parameter is defined in 3GPP TS 24.008 [12]."

InitialDPGPRS: "For encoding see 3GPP TS 29.060 [43]."

In addition to this ambiguous reference, TS 29.060 specifies:

> **"…the APN is coded as in the value part defined in 3GPP TS 24.008 (i.e. the 3GPP TS 24.008 IEI and 3GPP TS 24.008 octet length indicator are not included)."**

Hence, 29.078 is ambiguous as how to encode the APN in CAP.

One of the design principles of CAMEL control of GPRS shall be that neither the gprsSSF nor the SGSN has to perform any modification of the APN, when the APN needs to be copied

- between the access network (24.008) and CAP (29.078) and vice versa; and
- between GTP (29.060) and CAP (29.078) and vice versa.

Consistent referencing for the encoding of the APN is therefore of utmost importance. The current references in 29.078 do, e.g., not specify that the APN in CAP shall contain the data value of the APN, as defined in 24.008, only.

The present CR proposes therefore that the reference in 29.060 for the encoding of the APN be used in 29.078 as well, including the clause that the APN in CAP shall contain the data value of the APN, as defined in 24.008, only.

The reference for the encoding of the APN is required in section 5.1 only.

Summary of change: ⌘ Correct the reference for the encoding of the APN.

Consequences if not approved: ⌘ - ambiguity for GPRS designers;

	- inconsistent behaviour; the SCP may receive APNs from diffferent SGSNs in different formats. This may result in compatibility problems.

Clauses affected:	⌘	5.1, 11.14, 11.31		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘			

*** For Information ***

< extract from 3GPP TS 29.060 V3.9.0 >

7.7.30 Access Point Name

The Access Point Name is sent from the GGSN in the Network-requested PDP Context Activation procedure that is used to identify the access point of the packet data network that wishes to connect to the MS.

The Access Point Name is information from the MS or SGSN that may be used by the GGSN to differentiate between accesses to different external packet data networks using the same PDP Type.

The Access Point Name contains a logical name that is the APN Network Identifier (see 3GPP TS 23.060). It is coded as in the value part defined in 3GPP TS 24.008 (i.e. the 3GPP TS 24.008 IEI and 3GPP TS 24.008 octet length indicator are not included).

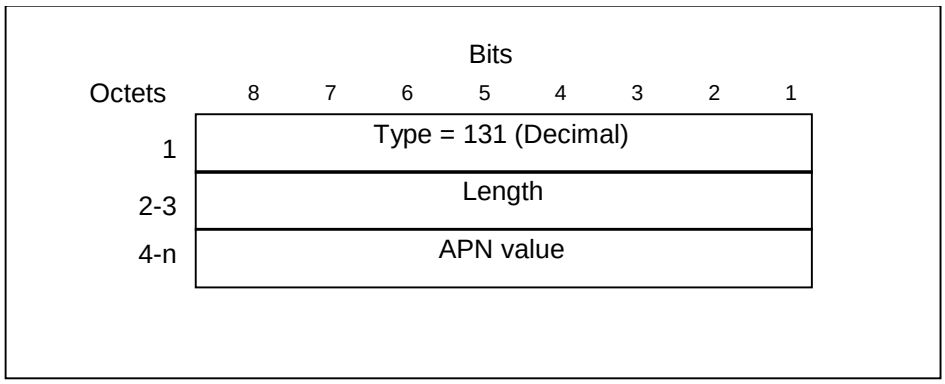

Figure 44: Access Point Name Information Element

< extract from 3GPP TS 24.008 V3.8.0 >

10.5.6.1 Access Point Name

The purpose of the *access point name* information element is to identify the packet data network to which the GPRS user wishes to connect and to notify the access point of the packet data network that wishes to connect to the MS.

The Access Point Name is a label or a full qualified domain name according to DNS naming conventions (see 3GPP TS 23.003 [10]).

The *access point name* is a type 4 information element with a minimum length of 3 octets and a maximum length of 102 octets.

The *access point name* information element is coded as shown in figure 10.5.134/3GPP TS 24.008 and table 10.5.152/3GPP TS 24.008.

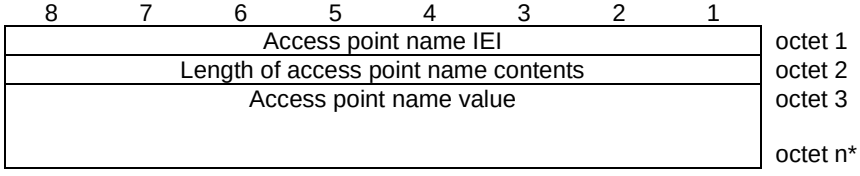

Figure 10.5.134/3GPP TS 24.008: *Access point name* information element

The value part is defined in 03.03 [10].

*** First Modification ***

5.1 Data types

…

< unmodified >

…

```
AccessPointName {PARAMETERS-BOUND: bound}::= OCTET STRING (SIZE(
    bound.&minAccessPointNameLength .. bound.&maxAccessPointNameLength))
-- Indicates the AccessPointName, refer to 3GPP TS 24.008 [12] for the encoding.
-- It shall be coded as in the value part defined in 3GPP TS 24.008,
-- i.e. the 3GPP TS 24.008 IEI and 3GPP TS 24.008 octet length indicator
-- shall not be included.
```

…

< unmodified >

…

*** Next Modification ***

11.14 ConnectGPRS procedure

11.14.1 General description

This operation is used to request the gprsSSF to modify the APN used when establishing a PDP context.

11.14.1.1 Parameters

- accessPointName:
  This parameter contains the Access Point Name (see 3GPP TS 29.060 [43]) towards which the PDP context shall be established. ~~The encoding of this parameter is defined in 3GPP TS 24.008 [12].~~

- pDPID:
  This parameter identifies the PDP context for which the modified Access Point Name shall be used.

11.14.2 Responding entity (gprsSSF)

11.14.2.1 Normal procedure

gprsSSF preconditions:

(1) A control relationship exists between the gprsSSF and the gsmSCF.

(2) The GPRS PDP context FSM idenntified by the PDPID is supsended at DP PDP_Context_Establishment.

(3) The gprsSSF is in state "Waiting for Instructions".

gprsSSF postcondition:

(1) The gprsSSF performs the actions to establish the PDP context identified by PDPID using the given Access Point Name.

(2) the gprsSSF cancels T_{SSF};

(3) if no EDPs are armed, the gprsSSF transits to state "Idle". Otherwise the gprsSSF transits to state "Monitoring".

No implicit activation or deactivation of DPs occurs.

11.14.2.2 Error handling

Generic error handling for the operation related errors is described in clause 10 and the TC services which are used for reporting operation errors are described in clause 12.

*** Next Modification ***

11.31 InitialDPGPRS procedure

11.31.1 General description

This operation is used by the gprsSSF after detection of a TDP-R in the GPRS session or PDP context state machine, to request the gsmSCF for instructions to complete the GPRS session or PDP context.

For a GPRS Session, the 'Attach' and 'Change of Position Session' TDP's may result in the InitialDPGPRS Procedure.

For a PDP Context, the 'PDP Context Establishment', the 'PDP Context Establishment Acknowledgement' and the 'Change of Position Context' TDP's may result in the InitialDPGPRS Procedure.

If a PDP Context related TDP is met, and there is at that moment a GPRS dialogue for the GPRS Session, then the gprsSSF shall not initiate the InitialDPGPRS Procedure for that PDP Context.

If the 'PDP Context Establishment Acknowledgement' event occurs and this event is armed as a TDP, and there is at that moment a GPRS dialogue for the PDP Context, then the gprsSSF shall not initiate a new InitialDPGPRS Procedure for that PDP Context.

11.31.1.1 Parameters

- serviceKey:
  This parameter indicates to the gsmSCF the requested IN service. It is used to address the required application/SLP within the gsmSCF (not for SCP addressing).

- gPRSEventType:
  This parameter indicates the armed GPRS Attach/Detach SM or PDP Context SM DP event, resulting in the InitialDPGPRS operation.

- mSISDN:
  MSISDN of the mobile subscriber for which the CAMEL service is invoked. For encoding see 3GPP TS 29.002 [13].

- iMSI:
  IMSI of the mobile subscriber for which the CAMEL service is invoked. For encoding see 3GPP TS 29.002 [13].

- timeAndTimezone:
  This parameter contains the time that the gprsSSF was triggered, and the time zone that the invoking gprsSSF resides in.

- gPRSMSClass:
  This parameter contains the MS Station capabilites of the mobile subscriber for which the CAMEL service is invoked.

  - MSNetworkCapabilities:
    This parameter contains the Network Capabilities of the GPRS session.

  - MSRadioAccessCapabilities:
    This parameter contains the Radio Access Capabilities of the MS.

- endUserAddress:
  This parameter identifies the PDP type, PDP type organisation and the actual PDP address. For encoding see 3GPP TS 29.060 [43].

- qualityOfService:
  This parameter contains the Quality of Service.
  If the InitialDPGPRS operation is sent as a result of the 'PDP Context Establishment' TDP, then the Quality of Service parameter shall contain the Requested QoS and the Subscribed QoS.
  If the InitialDPGPRS operation is sent as a result of the 'PDP Context Establishment Ackonwledgement' TDP,

then the Quality of Service parameter shall contain the Requested QoS, the Subscribed QoS and the Negotiated QoS.

- accessPointName:
  This parameter contains the requested address that the MS for which the CAMEL service is invoked for wants to connect to. ~~For encoding see 3GPP TS 29.060 [43].~~

- routeingAreaIdentity:
  This parameter contains the location information of the MS for which the CAMEL service is invoked from. For encoding see 3GPP TS 29.060 [43].

- chargingID:
  This parameter contains the charging ID that uniquely identifies together with the gGSNAddress the PDP context for the MS for which the CAMEL service is invoked from. For encoding see 3GPP TS 32.015.

- sGSNcapabilities:
  This parameter specifies the capabilities which the SGSN node can provide for the CAMEL service control.

- locationInformationInSGSN:
  This parameter indicates the location of the sending MS.

- pDPInitiationType:
  This parameter indicates whether a PDP context was established as a result of a network-initiated request or as a result of a subscriber request.

- gGSNAddress:
  This parameter refers to the IP address of the GGSN where the PDP context terminates. It is used together with the chargingID for uniquely identification of the PDP context for which the CAMEL service is invoked from. For encoding see 3GPP TS 23.003.

- secondaryPDP-context
  This parameter indicates that the PDP context is requested as a secondary PDP context.

11.31.2 Invoking entity (gprsSSF)

11.31.2.1 Normal procedure

gprsSSF preconditions:

(1) An event has been met that is armed as TDP.

(2) There is no GPRS dialogue active for that PDP Context or for the GPRS Session.

gprsSSF postcondition:

(1) A control relationship has been established and the gprsSSF is in state "waiting for instructions".

The address of the gsmSCF that the InitialDPGPRS operation shall be sent to is fetched from the valid CSI. The gprsSSF provides all available parameters.

A control relationship is established with the gsmSCF. The gprsSSF application timer T_{SSF} is set when the gprsSSF sends InitialDPGPRS for requesting instructions from the gsmSCF. It is used to prevent from excessive GPRS session or PDP context duration or volume usage.

11.31.2.2 Error handling

If the destination gsmSCF is not accessible then the gprsSSF instructs the SGSN to handle the GPRS session or PDP context according to the Default GPRS handling parameter of the valid CSI.

On expiration of T_{SSF} before receiving any operation, the gprsSSF aborts the interaction with the gsmSCF and instructs the SGSN to handle the call according to the Default GPRS handling parameter of the valid CSI.

If the MS abandons the establishment of a GPRS session or PDP context after the sending of InitialGPRSEvent, then the gprsSSF aborts the control relationship after the first response from the gsmSCF has been received.

Generic error handling for the operation related errors is described in clause 10 and the TC services which are used for reporting operation errors are described in clause 12.

*** End of Document ***

3GPP TSG CN WG2 Meeting #21 **N2-010996**
Cancun, Mexico, 26th - 30th November 2001

CHANGE REQUEST

⌘ **29.078** **CR** **225** ⌘ **rev** ⌘ Current version: **4.2.0** ⌘

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	Correction to references for the encoding of APN
Source:	⌘	Ericsson
Work item code:	⌘	CAMEL3
Date:	⌘	27 November 2001
Category:	⌘	A
Release:	⌘	Rel-4

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*

Use one of the following releases:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
REL-4 *(Release 4)*
REL-5 *(Release 5)*

Reason for change: ⌘ TS 29.078 contains inconsistent references for the encoding of the APN.

APN data type: "refer to 3GPP TS 24.008 [12] for the encoding."

ConnectGPRS: "The encoding of this parameter is defined in 3GPP TS 24.008 [12]."

InitialDPGPRS: "For encoding see 3GPP TS 29.060 [43]."

In addition to this ambiguous reference, TS 29.060 specifies:

> **"…the APN is coded as in the value part defined in 3GPP TS 24.008 (i.e. the 3GPP TS 24.008 IEI and 3GPP TS 24.008 octet length indicator are not included)."**

Hence, 29.078 is ambiguous as how to encode the APN in CAP.

One of the design principles of CAMEL control of GPRS shall be that neither the gprsSSF nor the SGSN has to perform any modification of the APN, when the APN needs to be copied

- between the access network (24.008) and CAP (29.078) and vice versa; and
- between GTP (29.060) and CAP (29.078) and vice versa.

Consistent referencing for the encoding of the APN is therefore of utmost importance. The current references in 29.078 do, e.g., not specify that the APN in CAP shall contain the data value of the APN, as defined in 24.008, only.

The present CR proposes therefore that the reference in 29.060 for the encoding of the APN be used in 29.078 as well, including the clause that the APN in CAP shall contain the data value of the APN, as defined in 24.008, only.

The reference for the encoding of the APN is required in section 5.1 only.

Summary of change: ⌘ Correct the reference for the encoding of the APN.

Consequences if not approved: ⌘ - ambiguity for GPRS designers;

	- inconsistent behaviour; the SCP may receive APNs from diffferent SGSNs in different formats. This may result in compatibility problems.

Clauses affected:	⌘	5.1, 11.14, 11.31		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘			

*** For Information ***

< extract from 3GPP TS 29.060 V3.9.0 >

7.7.30 Access Point Name

The Access Point Name is sent from the GGSN in the Network-requested PDP Context Activation procedure that is used to identify the access point of the packet data network that wishes to connect to the MS.

The Access Point Name is information from the MS or SGSN that may be used by the GGSN to differentiate between accesses to different external packet data networks using the same PDP Type.

The Access Point Name contains a logical name that is the APN Network Identifier (see 3GPP TS 23.060). It is coded as in the value part defined in 3GPP TS 24.008 (i.e. the 3GPP TS 24.008 IEI and 3GPP TS 24.008 octet length indicator are not included).

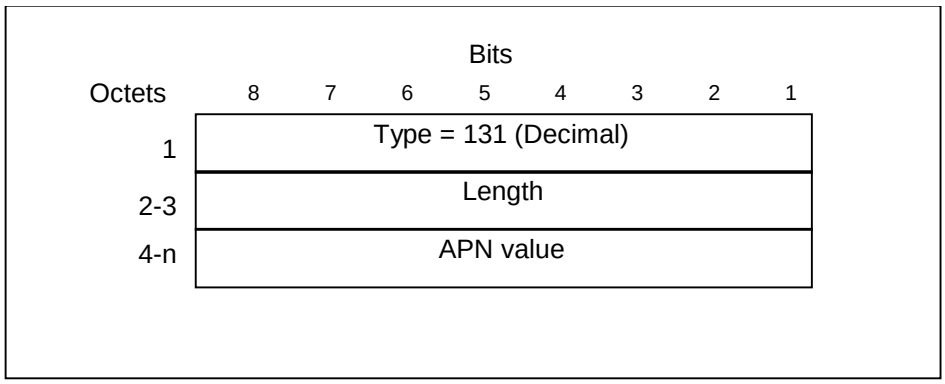

Figure 44: Access Point Name Information Element

< extract from 3GPP TS 24.008 V3.8.0 >

10.5.6.1 Access Point Name

The purpose of the *access point name* information element is to identify the packet data network to which the GPRS user wishes to connect and to notify the access point of the packet data network that wishes to connect to the MS.

The Access Point Name is a label or a full qualified domain name according to DNS naming conventions (see 3GPP TS 23.003 [10]).

The *access point name* is a type 4 information element with a minimum length of 3 octets and a maximum length of 102 octets.

The *access point name* information element is coded as shown in figure 10.5.134/3GPP TS 24.008 and table 10.5.152/3GPP TS 24.008.

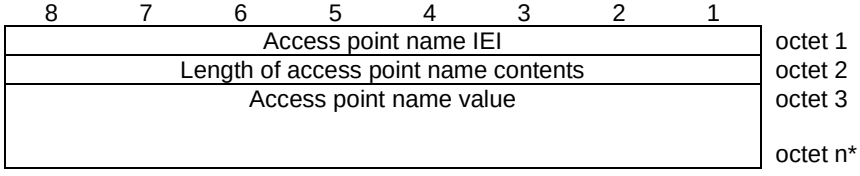

Figure 10.5.134/3GPP TS 24.008: *Access point name* information element

The value part is defined in 03.03 [10].

*** First Modification ***

5.1 Data types

…

< unmodified >

…

```
AccessPointName {PARAMETERS-BOUND: bound}::= OCTET STRING (SIZE(
    bound.&minAccessPointNameLength .. bound.&maxAccessPointNameLength))
-- Indicates the AccessPointName, refer to 3GPP TS 24.008 [12] for the encoding.
-- It shall be coded as in the value part defined in 3GPP TS 24.008,
-- i.e. the 3GPP TS 24.008 IEI and 3GPP TS 24.008 octet length indicator
-- shall not be included.
```

…

< unmodified >

…

*** Next Modification ***

11.14 ConnectGPRS procedure

11.14.1 General description

This operation is used to request the gprsSSF to modify the APN used when establishing a PDP context.

11.14.1.1 Parameters

- accessPointName:
  This parameter contains the Access Point Name (see 3GPP TS 29.060 [43]) towards which the PDP context shall be established. ~~The encoding of this parameter is defined in 3GPP TS 24.008 [12].~~

- pDPID:
  This parameter identifies the PDP context for which the modified Access Point Name shall be used.

11.14.2 Responding entity (gprsSSF)

11.14.2.1 Normal procedure

gprsSSF preconditions:

(1) A control relationship exists between the gprsSSF and the gsmSCF.

(2) The GPRS PDP context FSM idenntified by the PDPID is supsended at DP PDP_Context_Establishment.

(3) The gprsSSF is in state "Waiting for Instructions".

gprsSSF postcondition:

(1) The gprsSSF performs the actions to establish the PDP context identified by PDPID using the given Access Point Name.

(2) the gprsSSF cancels T_{SSF};

(3) if no EDPs are armed, the gprsSSF transits to state "Idle". Otherwise the gprsSSF transits to state "Monitoring".

No implicit activation or deactivation of DPs occurs.

11.14.2.2 Error handling

Generic error handling for the operation related errors is described in clause 10 and the TC services which are used for reporting operation errors are described in clause 12.

*** Next Modification ***

11.31 InitialDPGPRS procedure

11.31.1 General description

This operation is used by the gprsSSF after detection of a TDP-R in the GPRS session or PDP context state machine, to request the gsmSCF for instructions to complete the GPRS session or PDP context.

For a GPRS Session, the 'Attach' and 'Change of Position Session' TDP's may result in the InitialDPGPRS Procedure.

For a PDP Context, the 'PDP Context Establishment', the 'PDP Context Establishment Acknowledgement' and the 'Change of Position Context' TDP's may result in the InitialDPGPRS Procedure.

If a PDP Context related TDP is met, and there is at that moment a GPRS dialogue for the GPRS Session, then the gprsSSF shall not initiate the InitialDPGPRS Procedure for that PDP Context.

If the 'PDP Context Establishment Acknowledgement' event occurs and this event is armed as a TDP, and there is at that moment a GPRS dialogue for the PDP Context, then the gprsSSF shall not initiate a new InitialDPGPRS Procedure for that PDP Context.

11.31.1.1 Parameters

- serviceKey:
  This parameter indicates to the gsmSCF the requested IN service. It is used to address the required application/SLP within the gsmSCF (not for SCP addressing).

- gPRSEventType:
  This parameter indicates the armed GPRS Attach/Detach SM or PDP Context SM DP event, resulting in the InitialDPGPRS operation.

- mSISDN:
  MSISDN of the mobile subscriber for which the CAMEL service is invoked. For encoding see 3GPP TS 29.002 [13].

- iMSI:
  IMSI of the mobile subscriber for which the CAMEL service is invoked. For encoding see 3GPP TS 29.002 [13].

- timeAndTimezone:
  This parameter contains the time that the gprsSSF was triggered, and the time zone that the invoking gprsSSF resides in.

- gPRSMSClass:
  This parameter contains the MS Station capabilites of the mobile subscriber for which the CAMEL service is invoked.

  - MSNetworkCapabilities:
    This parameter contains the Network Capabilities of the GPRS session.

  - MSRadioAccessCapabilities:
    This parameter contains the Radio Access Capabilities of the MS.

- endUserAddress:
  This parameter identifies the PDP type, PDP type organisation and the actual PDP address. For encoding see 3GPP TS 29.060 [43].

- qualityOfService:
  This parameter contains the Quality of Service.
  If the InitialDPGPRS operation is sent as a result of the 'PDP Context Establishment' TDP, then the Quality of Service parameter shall contain the Requested QoS and the Subscribed QoS.
  If the InitialDPGPRS operation is sent as a result of the 'PDP Context Establishment Ackonwledgement' TDP,

then the Quality of Service parameter shall contain the Requested QoS, the Subscribed QoS and the Negotiated QoS.

- accessPointName:
  This parameter contains the requested address that the MS for which the CAMEL service is invoked for wants to connect to. ~~For encoding see 3GPP TS 29.060 [43].~~

- routeingAreaIdentity:
  This parameter contains the location information of the MS for which the CAMEL service is invoked from. For encoding see 3GPP TS 29.060 [43].

- chargingID:
  This parameter contains the charging ID that uniquely identifies together with the gGSNAddress the PDP context for the MS for which the CAMEL service is invoked from. For encoding see 3GPP TS 32.015.

- sGSNcapabilities:
  This parameter specifies the capabilities which the SGSN node can provide for the CAMEL service control.

- locationInformationInSGSN:
  This parameter indicates the location of the sending MS.

- pDPInitiationType:
  This parameter indicates whether a PDP context was established as a result of a network-initiated request or as a result of a subscriber request.

- gGSNAddress:
  This parameter refers to the IP address of the GGSN where the PDP context terminates. It is used together with the chargingID for uniquely identification of the PDP context for which the CAMEL service is invoked from. For encoding see 3GPP TS 23.003.

- secondaryPDP-context
  This parameter indicates that the PDP context is requested as a secondary PDP context.

11.31.2 Invoking entity (gprsSSF)

11.31.2.1 Normal procedure

gprsSSF preconditions:

(1) An event has been met that is armed as TDP.

(2) There is no GPRS dialogue active for that PDP Context or for the GPRS Session.

gprsSSF postcondition:

(1) A control relationship has been established and the gprsSSF is in state "waiting for instructions".

The address of the gsmSCF that the InitialDPGPRS operation shall be sent to is fetched from the valid CSI. The gprsSSF provides all available parameters.

A control relationship is established with the gsmSCF. The gprsSSF application timer T_{SSF} is set when the gprsSSF sends InitialDPGPRS for requesting instructions from the gsmSCF. It is used to prevent from excessive GPRS session or PDP context duration or volume usage.

11.31.2.2 Error handling

If the destination gsmSCF is not accessible then the gprsSSF instructs the SGSN to handle the GPRS session or PDP context according to the Default GPRS handling parameter of the valid CSI.

On expiration of T_{SSF} before receiving any operation, the gprsSSF aborts the interaction with the gsmSCF and instructs the SGSN to handle the call according to the Default GPRS handling parameter of the valid CSI.

If the MS abandons the establishment of a GPRS session or PDP context after the sending of InitialGPRSEvent, then the gprsSSF aborts the control relationship after the first response from the gsmSCF has been received.

Generic error handling for the operation related errors is described in clause 10 and the TC services which are used for reporting operation errors are described in clause 12.

*** End of Document ***

3GPP TSG-CN WG2 Meeting #21 ***Tdoc N2-011011***
Cancun, Mexico, 26th - 30th November 2001

CHANGE REQUEST

⌘ **29.078** **CR** **227** ⌘ rev ⌘ Current version: 3.9.0 ⌘

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	Correction to precondition of ContinueWithArgument
Source:	⌘	Ericsson
Work item code:	⌘	CAMEL3
Date:	⌘	28 November 2001
Category:	⌘	F (essential correction)
Release:	⌘	R99

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*

Use one of the following releases:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
REL-4 *(Release 4)*
REL-5 *(Release 5)*

Reason for change:	⌘	TS 29.078 specifies that ContinueWithArgument (CWA) may be used when call processing has been suspended at one of the following DPs: - DP Collected Info; - DP Analysed Info; - DP Terminating Attempt Authorised. However, TS 23.078 also allows the reception of CWA in the case that call processing has been suspended at DP T-Busy and DP T-NoAnswer due to conditional call forwarding. The SCP's capability to send CWA in this case shall not be removed due to the incomplete DP list in TS 29.078. Therefore, the list of DPs shall be removed from the precondition in the procedure description of CWA in TS 29.078. For the Connect (CON) operation, there is no explicit list of DPs where this operation is allowed. The precondition of CWA operation shall be aligned with the precondition of CON.
Summary of change:	⌘	Correction to precondition of ContinueWithArgument.
Consequences if not approved:	⌘	Inconsistent behaviour of equipment from different vendors. Service logics may assume that CWA may be used at forwarding notification, whilst the gsmSSF may reject such operation at that moment.

Clauses affected:	⌘			
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘			

*** For Information ***

- extract from TS 29.078, section 11.13.2 (Connect Procedure) -

11.13.2 Responding entity (gsmSSF)

11.13.2.1 Normal procedure

gsmSSF precondition:

(1) A control relationship exists between the gsmSSF and the gsmSCF

(2) BCSM: Basic call processing has been suspended at a DP.

(3) The gsmSSF is in state "Waiting for Instructions".

gsmSSF postcondition:

(1) The gsmSSF performs the call processing actions to route the call to the specified destination.

(2) In the O-BCSM, call processing resumes at PIC Analyze_Information.

On receipt of this operation in the gsmSSF state "Waiting for Instructions", the gsmSSF performs the following actions:

- The gsmSSF cancels T_{SSF}.
- If no EDPs have been armed and neither a CallInformationReport nor an ApplyChargingReport has been requested, the gsmSSF goes to state "Idle". Otherwise, the gsmSSF goes to state "Monitoring".

No implicit activation or deactivation of DPs occurs.

Statistic counter(s) are not affected.

11.13.2.2 Error handling

Generic error handling for the operation related errors are described in clause 10 and the TC services which are used for reporting operation errors are described in clause 12.

- end of extract from TS 29.078, section 11.13.2 -

*** First Modification ***

11.20 ContinueWithArgument Procedure

11.20.1 General description

This operation is used to request the SSF to proceed with call processing at the DP at which it previously suspended call processing to await SCF instructions. It is also used to provide additional service related information to a User (Called Party or Calling Party) whilst the call processing proceeds.

In general all parameters which are provided in a ContinueWithArgument operation to the gsmSSF shall replace the corresponding signalling parameter in the CCF, in accordance with ES 201 296 [38] and shall be used for subsequent call processing. Parameters which are not provided by the ContinueWithArgument operation shall retain their value (if already assigned) in the CCF for subsequent call processing.

11.20.1.1 Parameters

- alertingPattern:
  This parameter indicates the type of alerting to be applied. It is defined in 3GPP TS 29.002 [13].

- serviceInteractionIndicatorsTwo:
  This parameter contains indicators which are exchanged between the gsmSSF and the gsmSCF to resolve interactions between IN based services and network based services.

- callingPartysCategory:
  This parameter indicates the type of calling party (e.g., operator, pay phone, ordinary subscriber).

- genericNumbers:
  This parameter allows the gsmSCF to set the Generic Number parameter used in the network. It is used for transfer of Additional Calling Party Number.

- suppressionOfAnnouncement:
  This parameter indicates that announcements and tones which are played in the exchange at non-successful call set-up attempts shall be suppressed.

- Carrier:
  This parameter indicates carrier information. It consists of the carrier selection field followed by the Carrier ID information to be used by gsmSSF for routing a call to a carrier.

  It comprises the following embedded sub-parameter:

  - carrierSelectionField:
    This parameter indicates how the selected carrier is provided (e.g. pre-subscribed).

  - carrierID:
    This alternative indicates the carrier to use for the call. It contains the digits of the carrier identification code.

- naOliInfo:
  This parameter contains originating line information which identifies the charged party number type to the carrier.

- ChargeNumber:
  This parameter contains the number that identifies the entity to be charged for the call. It identifies the chargeable number for the usage of a carrier (applicable on a call sent into a North American long distance carrier). For a definition of this parameter refer to ANSI ISUP T1.113 [53].

- cug-Interlock:
  This parameter uniquely identifies a CUG within a network.

- cug-OutgoingAccess:
  This parameter indicates if the calling user has subscribed to the outgoing access inter-CUG accessibility subscription option.

11.20.2 Responding entity (gsmSSF)

11.20.2.1 Normal procedure

gsmSSF precondition:

(1) A control relationship exists between the gsmSSF and the gsmSCF.

(2) BCSM: Basic call processing has been suspended at a DP ~~Collected_Info, DP Analysed_Info or DP Terminating_Attempt_Authorised~~.

(3) gsmSSF is in the state "Waiting for Instructions".

gsmSSF postcondition:

(1) BCSM: Basic call processing continues with modified information.

(2) The gsmSSF moves to the state "Monitoring" if there exist armed EDPs or outstanding reports, otherwise the gsmSSF transits to "Idle".

11.20.2.2 Error handling

Generic error handling for the operation related errors are described in clause 10 and the TC services which are used for reporting operation errors are described in clause 12.

*** End of Document ***

3GPP TSG-CN WG2 Meeting #21
Cancun, Mexico, 26th - 30th November 2001

Tdoc N2-011039

CHANGE REQUEST

⌘	29.078	CR	229	⌘	rev		⌘	Current version:	4.2.0	⌘

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Correction to precondition of ContinueWithArgument
Source:	⌘	Ericsson
Work item code:	⌘	CAMEL3
Date:	⌘	30 November 2001
Category:	⌘	A
Release:	⌘	Rel-4

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*

Use one of the following releases:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
REL-4 *(Release 4)*
REL-5 *(Release 5)*

Reason for change:	⌘	TS 29.078 specifies that ContinueWithArgument (CWA) may be used when call processing has been suspended at one of the following DPs: - DP Collected Info; - DP Analysed Info; - DP Terminating Attempt Authorised. However, TS 23.078 also allows the reception of CWA in the case that call processing has been suspended at DP T-Busy and DP T-NoAnswer due to conditional call forwarding. The SCP's capability to send CWA in this case shall not be removed due to the incomplete DP list in TS 29.078. Therefore, the list of DPs shall be removed from the precondition in the procedure description of CWA in TS 29.078. For the Connect (CON) operation, there is no explicit list of DPs where this operation is allowed. The precondition of CWA operation shall be aligned with the precondition of CON.
Summary of change:	⌘	Correction to precondition of ContinueWithArgument.
Consequences if not approved:	⌘	Inconsistent behaviour of equipment from different vendors. Service logics may assume that CWA may be used at forwarding notification, whilst the gsmSSF may reject such operation at that moment.

Clauses affected:	⌘			
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘			

*** For Information ***

- extract from TS 29.078, section 11.13.2 (Connect Procedure) -

11.13.2 Responding entity (gsmSSF)

11.13.2.1 Normal procedure

gsmSSF precondition:

(1) A control relationship exists between the gsmSSF and the gsmSCF

(2) BCSM: Basic call processing has been suspended at a DP.

(3) The gsmSSF is in state "Waiting for Instructions".

gsmSSF postcondition:

(1) The gsmSSF performs the call processing actions to route the call to the specified destination.

(2) In the O-BCSM, call processing resumes at PIC Analyze_Information.

On receipt of this operation in the gsmSSF state "Waiting for Instructions", the gsmSSF performs the following actions:

- The gsmSSF cancels T_{SSF}.
- If no EDPs have been armed and neither a CallInformationReport nor an ApplyChargingReport has been requested, the gsmSSF goes to state "Idle". Otherwise, the gsmSSF goes to state "Monitoring".

No implicit activation or deactivation of DPs occurs.

Statistic counter(s) are not affected.

11.13.2.2 Error handling

Generic error handling for the operation related errors are described in clause 10 and the TC services which are used for reporting operation errors are described in clause 12.

- end of extract from TS 29.078, section 11.13.2 -

*** First Modification ***

11.20 ContinueWithArgument Procedure

11.20.1 General description

This operation is used to request the SSF to proceed with call processing at the DP at which it previously suspended call processing to await SCF instructions. It is also used to provide additional service related information to a User (Called Party or Calling Party) whilst the call processing proceeds.

In general all parameters which are provided in a ContinueWithArgument operation to the gsmSSF shall replace the corresponding signalling parameter in the CCF, in accordance with ES 201 296 [38] and shall be used for subsequent call processing. Parameters which are not provided by the ContinueWithArgument operation shall retain their value (if already assigned) in the CCF for subsequent call processing.

11.20.1.1 Parameters

- alertingPattern:
  This parameter indicates the type of alerting to be applied. It is defined in 3GPP TS 29.002 [13].

- serviceInteractionIndicatorsTwo:
  This parameter contains indicators which are exchanged between the gsmSSF and the gsmSCF to resolve interactions between IN based services and network based services.

- callingPartysCategory:
  This parameter indicates the type of calling party (e.g., operator, pay phone, ordinary subscriber).

- genericNumbers:
  This parameter allows the gsmSCF to set the Generic Number parameter used in the network. It is used for transfer of Additional Calling Party Number.

- suppressionOfAnnouncement:
  This parameter indicates that announcements and tones which are played in the exchange at non-successful call set-up attempts shall be suppressed.

- Carrier:
  This parameter indicates carrier information. It consists of the carrier selection field followed by the Carrier ID information to be used by gsmSSF for routing a call to a carrier.

  It comprises the following embedded sub-parameter:

  - carrierSelectionField:
    This parameter indicates how the selected carrier is provided (e.g. pre-subscribed).

  - carrierID:
    This alternative indicates the carrier to use for the call. It contains the digits of the carrier identification code.

- naOliInfo:
  This parameter contains originating line information which identifies the charged party number type to the carrier.

- ChargeNumber:
  This parameter contains the number that identifies the entity to be charged for the call. It identifies the chargeable number for the usage of a carrier (applicable on a call sent into a North American long distance carrier). For a definition of this parameter refer to ANSI ISUP T1.113 [53].

- cug-Interlock:
  This parameter uniquely identifies a CUG within a network.

- cug-OutgoingAccess:
  This parameter indicates if the calling user has subscribed to the outgoing access inter-CUG accessibility subscription option.

11.20.2 Responding entity (gsmSSF)

11.20.2.1 Normal procedure

gsmSSF precondition:

(1) A control relationship exists between the gsmSSF and the gsmSCF.

(2) BCSM: Basic call processing has been suspended at a DP ~~Collected_Info, DP Analysed_Info or DP Terminating_Attempt_Authorised~~.

(3) gsmSSF is in the state "Waiting for Instructions".

gsmSSF postcondition:

(1) BCSM: Basic call processing continues with modified information.

(2) The gsmSSF moves to the state "Monitoring" if there exist armed EDPs or outstanding reports, otherwise the gsmSSF transits to "Idle".

11.20.2.2 Error handling

Generic error handling for the operation related errors are described in clause 10 and the TC services which are used for reporting operation errors are described in clause 12.

*** End of Document ***